UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/832,160	04/09/2001	Salman Akram	3846.2US(98-0796.2)	8501

24247 7590 05/22/2006

TRASK BRITT
P.O. BOX 2550
SALT LAKE CITY, UT 84110

EXAMINER	
GRAYBILL, DAVID E	
ART UNIT	**PAPER NUMBER**
2822	

DATE MAILED: 05/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/832,160	AKRAM ET AL.	
	Examiner	Art Unit	
	David E. Graybill	2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 April 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9 and 12-34* is/are pending in the application.

4a) Of the above claim(s) *4,9 and 23-34* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-8 and 10-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1 page*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

In the rejections infra, generally, reference labels are recited only for the first recitation of identical claim elements.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3, 5-8, 12, 13, 15-17, 19 and 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Crumly (5946555) and Wada (6071810).

At column 1, line 49 to column 2, line 33, Crumly discloses a method for fabricating a chip-scale package, comprising: positioning a preformed polymeric film 18 including at least one aperture 27 that extends

substantially longitudinally therethrough over a semiconductor device 12 with the at least one aperture in substantial alignment with a corresponding bond pad 14 of the semiconductor device; and introducing conductive material 32 into the at least one aperture; adhering the preformed polymeric film to the semiconductor device; defining at least another aperture 27 through the preformed polymeric film; wherein the defining is effected before the positioning; wherein the introducing comprises bonding the conductive material to the corresponding bond pad; further comprising depositing conductive material onto the preformed polymeric film and within the at least one aperture; wherein depositing comprises physical vapor depositing "sputtering" the conductive material; forming at least one contact 20 at an end of the conductive material, opposite the semiconductor device; placing a conductive structure 22 adjacent the at least one contact; positioning at least one conductive trace 22 on the preformed polymeric film and in communication with the conductive material; forming at least one contact 22 in communication with the conductive trace; placing a conductive structure adjacent the at least one contact 20; placing the preformed polymeric film on at least a portion of a peripheral edge of the semiconductor device; and placing polymeric material 28 at least laterally adjacent the conductive structure.

However, Crumly does not appear to explicitly disclose introducing the conductive material in an at least partially liquid state.

Nonetheless, at column 102, lines 6-19, Wada discloses introducing conductive material 187 in an at least partially liquid state. In addition, it would have been obvious to combine this disclosure of Wada with the disclosure of Crumly because it would facilitate sputter deposition of the material of Crumly.

Claims 1-3, 5-8 and 12-22 rejected under 35 U.S.C. 103(a) as being unpatentable over Fjelstad (6284563), Crumly (5946555) and Wada (6071810).

At column 3, line 43 to column 4, line 54; column 8, line 13 to column 9, line 19; and column 11, lines 16-41, Fjelstad discloses a method for fabricating a chip-scale package, comprising: positioning a preformed polymeric film 130 including at least one aperture "contact holes" that extends substantially longitudinally therethrough over a semiconductor device 100 with the at least one aperture in substantial alignment with a corresponding bond pad 110 of the semiconductor device; and selectively introducing conductive material 170 into the at least one aperture; adhering the preformed polymeric film to the semiconductor device; defining at least another aperture "contact holes" through the preformed polymeric film; wherein the defining is effected before the positioning; wherein the

introducing comprises bonding the conductive material to the corresponding bond pad; further comprising depositing conductive material onto the preformed polymeric film and within the at least one aperture; forming at least one contact 175 at an end of the conductive material, opposite the semiconductor device; placing a conductive structure "solder" adjacent the at least one contact; wherein placing comprises applying solder to the at least one contact; positioning at least one conductive trace 170 on the preformed polymeric film and in communication with the conductive material; forming at least one contact 175 in communication with the conductive trace; placing a conductive structure adjacent the at least one contact; wherein placing comprises applying solder to the at least one contact; placing the preformed polymeric film on at least a portion of a peripheral edge of the semiconductor device; placing polymeric material 180 at least laterally adjacent the conductive structure; placing an inherently conductive (at least thermally) elastomer 290 over at least one conductive structure; placing another inherently conductive (at least thermally) structure 180' in contact with the conductive elastomer, opposite the at least one conductive structure.

However, Fjelstad does not appear to explicitly disclose wherein depositing comprises chemical vapor depositing or physical vapor depositing the conductive material.

Nonetheless, as cited, Fjelstad discloses wherein depositing comprises "a variety of techniques, such as by electroplating or by electroless plating." Additionally, as cited supra, Crumly discloses that electroplating "electrolysis" and physical vapor depositing "sputtering" are alternatives and equivalents; therefore, it would have been obvious to substitute or combine the physical vapor depositing of Crumly for or with the electroplating of Fjelstad. See In re May (CCPA) 136 USPQ 208 (It is our opinion that the substitution of Wille's type seal for the cement of Hallauer in Figure 1 would be obvious to persons of ordinary skill in the art from the disclosures of these references, merely involving an obvious selection between known alternatives in the art and the application of routine technical skills.); In re Cornish (CCPA) 125 USPQ 413; In re Soucy (CCPA) 153 USPQ 816; Sabel et al. v. The Wickes Corporation et al. (DC SC) 175 USPQ 3; Ex parte Seiko Koko Kabushiki Kaisha Co. (BdPatApp&Int) 225 USPQ 1260; and Ex parte Rachlin (BdPatApp&Int) 151 USPQ 56. See also Smith v. Hayashi, 209 USPQ 754 (Bd. of Pat. Inter. 1980) (However, there was evidence that both phthalocyanine and selenium were known photoconductors in the art of electrophotography. "This, in our view, presents strong evidence of obviousness in substituting one for the other in an electrophotographic environment as a photoconductor." 209 USPQ at 759.). An express suggestion to substitute one equivalent component or process for another is

not necessary to render such substitution obvious. In re Fout, 675 F.2d 297, 213 USPQ 532 (CCPA 1982). "It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from their having been individually taught in the prior art." In re Kerkhoven, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980) (citations omitted). See also In re Crockett, 279 F.2d 274, 126 USPQ 186 (CCPA 1960); Ex parte Quadranti, 25 USPQ2d 1071 (Bd. Pat. App. & Inter. 1992).

Also, Fjelstad does not appear to explicitly disclose introducing the conductive material in an at least partially liquid state.

Nonetheless, at column 102, lines 6-19, Wada discloses introducing conductive material 187 in an at least partially liquid state. In addition, it would have been obvious to combine this disclosure of Wada with the disclosure of Crumly because it would facilitate sputter deposition of the material of Fjelstad and Crumly.

Claims 14, 18, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crumly and Wada as applied to claims 13 and 17, and further in combination with Fjelstad (6284563).

Crumly and Wada do not appear to explicitly disclose wherein placing comprises applying solder to the at least one contact; placing a conductive

elastomer over at least one conductive structure; placing another conductive structure in contact with the conductive elastomer, opposite the at least one conductive structure.

Nevertheless, as cited, Fjelstad discloses wherein placing comprises applying "solder" to the at least one contact; placing an inherently conductive (at least thermally) elastomer 290 over at least one conductive structure; placing another inherently conductive (at least thermally) structure 180' in contact with the conductive elastomer, opposite the at least one conductive structure. Furthermore, it would have been obvious to combine this disclosure of Fjelstad with the disclosure of Crumly because it would facilitate low stress external electrical connection.

In the alternative, claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crumly and Wada, or Crumly, Wada, and Fjelstad as applied to claim 17, and further in combination with Jacobs (6294407).

The applied prior art does not appear to disclose literally, placing a conductive elastomer over at least one conductive structure; placing another conductive structure in contact with the conductive elastomer, opposite the at least one conductive structure.

Regardless, at column 5, line 61 to column 6, line 46; and column 14, line 42 to column 15, line 2, Jacobs discloses placing a conductive (at least

thermally) elastomer 106 over at least one conductive structure 104, and placing another conductive structure 112a in contact with the conductive elastomer, opposite the at least one conductive structure. Moreover, it would have been obvious to combine this disclosure of Jacobs with the disclosure of the applied prior art because it would enable external electrical connection and package cooling.

Applicant's remarks filed 2-24-6 have been fully considered and are adequately addressed in the rejection supra.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

For information on the status of this application applicant should check PAIR: Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alternatively, applicant may contact the File Information Unit at (703) 308-2733. Telephone status inquiries should not be directed to the examiner. See MPEP 1730VIC, MPEP 203.08 and MPEP 102.

Any other telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (571) 272-1930. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.
The fax phone number for group 2800 is (571) 273-8300.

David E. Graybill
Primary Examiner
Art Unit 2822

D.G.
13-May-06